

### Feedback

*Bandolier* loves feedback from paper and electronic readers. That feedback tells us that readers want to know more about health rather than just illness. So does *Bandolier*, which is why we have devoted so much time to healthy living evidence over the years, and why there is a large healthy living section on the *Bandolier* Internet site.

Even so, we did some searching, and asked some friends of *Bandolier*, about evidence concerning health rather than illness. Perhaps it wasn't quite what we were expecting, but there is interesting stuff out there, and some of the evidence found appears in this month's pages.

### Literature-based medicine

Access to medical literature has never been greater, though we appreciate that those of us in academe's hallowed halls find it more accessible than most. Literature, though, is not evidence. There may be masses out there, but we need to sift it, and check it for quality, validity, and size to make sure that it is right. Problems particularly occur at cutting edges of common conditions without really effective treatments. So no apologies for a little look at a growing literature on restless legs syndrome. It is common, affects quality of life, but with some emergent evidence on treatment.

### Subscription reminder

July is the month on which the majority of *Bandolier* subscriptions become due. First, then, a big thank-you to the subscribers who have helped keep *Bandolier* going for 2003-2004.

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So when you receive your letter about subscription renewal, we hope you feel sufficiently enthused to take out a subscription for another year, and perhaps encourage others. *Bandolier* is available at considerable discounts for bulk purchases. Perhaps you could encourage employers, or even sponsors, to pay for bulk purchases for your organisation.

### PREVENTION OR CURE?

"Politics is the art of preventing people from taking part in affairs which properly concern them" (Paul Valéry, 1946).

In the UK over the last year or so, public and professionals have been bombarded by messages about obesity, lack of exercise, healthy eating, exercise, salt, smoking, safe sex and teenage pregnancy, to name but a few. Media and individuals have taken to criticising the "nanny state" that tries to tell us what to do with our lives.

*Bandolier* is no defender of states or governments, nanny or otherwise, but for some time the evidence has been accumulating that healthy lifestyle trumps anything that medicine can offer, and infinitely more than the multitudes of quackeries written about in our newspapers. Media seems to be oblivious to the irony of attacks on health promotion (for which there is a wealth of good evidence of massive effectiveness) while they promote voodoo nonsense (for which there is good evidence of ineffectiveness or no evidence of any effect).

Time, then, for some quiet reflection, and a further look at the evidence about which does best, healthy living or treating the unhealthy. But first a declaration of initial bias: *Bandolier* is a firm believer that the best way to see your doctor is socially. Another bias is the belief that giving people good information on how to avoid illness could be much better done, and it properly concerns every one of us, as individuals and taxpayers.

### Healthy living evidence

There is a lot, and much has appeared in these pages over the years. A good example (*Bandolier* 78) was from the US Nurses study, that showed that those with a good diet, who did not smoke, and who had enough exercise had less than half the risk of heart disease compared with those who had

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none of these markers of good health. For those who additionally had a normal BMI and who drank alcohol moderately, the risk was down to a quarter. The trouble was that only 1 in 8 women were in the former category, and only 1 in 30 in the latter.

The *Bandolier* Internet site has collected all this together in one easily navigable area. Whether it is heart disease, or cancer, or bone density, arthritis, macular degeneration, or whatever, the message is the same. If you:

- ◆ don't smoke,
- ◆ have a good diet (lots of fruit and vegetables),
- ◆ take exercise (brisk walks several times a week),
- ◆ keep your weight in check (BMI below 30),
- ◆ and have a glass of what you fancy (in moderation),

then the chance of having something nasty happen to you is very, very, much reduced.

Of course other factors, like poverty, or unemployment, or living conditions also come into play, and can affect health significantly. Wales (population about 2.5 million) has many of these issues, and the economics of health in Wales have been examined with a very broad brush [1]. Noteworthy was that in 2001, 81% of expenditure was on illness (£2.4 billion, or about £1,000 per person), while the spending on health promotion was one thousand times less, at £2.3 million (or £1 per person). Each person in Wales had 13 prescriptions over a year (it is 10 in England).

## Technology or tomatoes?

Over the last few decades there have been large reductions in deaths from coronary heart disease in industrialised coun-

tries. Two main reasons for this present themselves (Figure 1):

- ◆ One is that treatments are better, both preventative and when a coronary event occurs.
- ◆ Another is that the known risk factors for coronary events (smoking, blood pressure, cholesterol) have also changed for the better, and that lower smoking rates, lower blood pressure, and lower cholesterol result in fewer events, and therefore fewer deaths.

A number of studies have sought to evaluate which has done most (Table 1). In the USA, UK, and New Zealand a rough answer is that about 40% of the reduction comes from better treatments, and about 50-60% from reduction in risk factors.

The numbers of deaths averted are not trivial, amounting to 68,000 a year in England and Wales in 2000 over what would have been expected from 1981, for instance. Moreover, efforts to improve coronary health appear to be cost-effective, with a US estimate extrapolating efforts in the 1990s to benefits up to 2015 producing a cost of \$5,400 for each life saved.

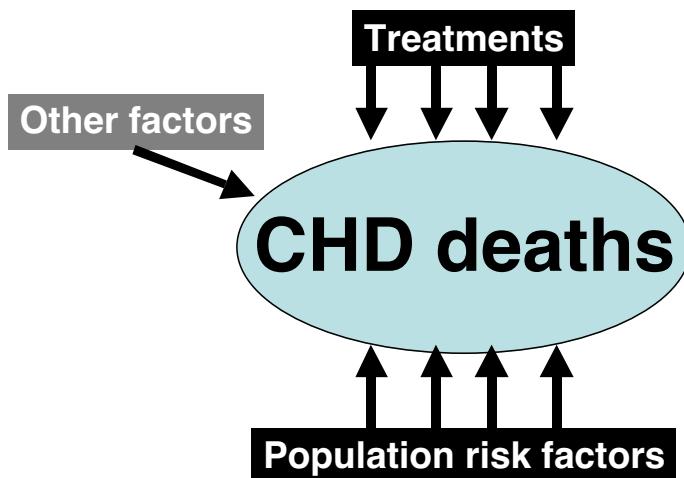
Large and long epidemiological studies [2] can attribute only a proportion of the benefits from reduction in CHD deaths to classical risk factors. Other, unidentified, changes must be having an influence.

*Bandolier*, perhaps naively, likes to think of this as the supermarket or tomato effect. We eat better than we did in the 60s and 70s, with fresh fruit and vegetables readily available all year round. Many have taken up exercise: there is an epidemic of people striding around to get their daily twenty-minutes. But beneficial behaviour is not evenly

**Table 1: Selection of studies on medical and risk factor effects on CHD deaths**

Reference	Study	Methods	Main results
Hunink et al. JAMA 1997 277: 535-542	Examine secular trends in risk factor levels and improvements in treatments on decreased CHD mortality in USA 1980-1990	Use of literature reviews, US statistics, surveys, ongoing clinical trials. Computer simulation models	Annual coronary mortality 34% (127,000 deaths in 1990) lower than predicted from steady state. 25% of decline by reduction in risk factors in patients without CHD 29% of decline by reduction in risk factors in patients with CHD 43% by other improvements in treatment and patients
Capewell et al. Heart 1999 81: 380-386	Estimate fall in Scottish CHD mortality due to risk factor changes or medical treatment changes 1975-1994	Systematic reviews and meta-analyses of RCTs, Scottish epidemiological studies	Annual coronary mortality 29% (6205 deaths in 1994) lower than predicted from steady state 51% due to risk factor changes 40% due to treatments 9% other
Capewell et al. Circulation 2000 102: 1511-1516	Estimate fall in Auckland (NZ) CHD mortality due to risk factor changes or medical treatment changes 1982-1993	Systematic reviews and meta-analyses of RCTs, Auckland epidemiological studies	Annual coronary mortality 24% (558 deaths in 1993) lower than predicted from steady state 54% due to risk factor changes 46% due to treatments
Goldman et al. J Am Coll Cardiol 2001 38: 1012-1017	Estimate impact and cost-effectiveness of risk factor reductions 1991-1990 (extrapolated to 2015)	Use of large validated databases and computer modeling	Change in risk factors resulted in about 430,000 fewer CHD deaths and 740,000 total deaths over the period, estimated cost per life saved of \$44,000 Extrapolated to 2015 was saving of 3.6 million CHD deaths and 1.2 million non-CHD deaths at cost of \$5,400 per life saved
Unal et al. Circulation 2004 109: 1101-1107	Estimate fall in English & Welsh CHD mortality due to risk factor changes or medical treatment changes 1981-2000	Systematic reviews and meta-analyses of RCTs, epidemiological studies, official statistics	Annual coronary mortality 62% lower in men, 45% lower in women (68,230 deaths in 2000) than predicted from steady state 58% due to risk factor changes 42% due to treatments

**Figure 1: Competing influences reducing CHD deaths**



spread, and the supermarket and fast-food effect has the adverse effect of over-eating and obesity.

## Changing the future

Most people with CHD have conventional risk factors. An analysis of 122,000 patients enrolled in 14 RCTs of CHD (myocardial infarction, unstable angina, and percutaneous coronary intervention) conducted in the 1990s showed that 85% of women and 81% of men had at least one conventional risk factor [3].

If levels of risk factors keep falling, what does the future hold?

The answer for the UK seems to be continued large reductions in CHD death rates [4]. Using Scottish data extrapolated to the UK, and extrapolating a continuation of current trends to 2010 for those under 75, it calculates 24,000 fewer deaths in 2010 from reductions in smoking prevalence, and blood pressure and cholesterol. That is close to the present UK government target of 28,000 fewer deaths in 2010.

Bigger changes in population risk factors through lifestyle changes could produce bigger benefits. For instance, getting smoking prevalence down to 18%, getting average cholesterol levels down to 5.2 mmol/L, and additional lowering of blood pressure by 3-4 mmHg, could double the number of deaths prevented or postponed. Improved medical treatments and the tomato effect could add to this.

## Comment

All of which makes one wonder about that miserly £1 per person spent on health promotion. The evidence from the US nurses study is that most people, well over half, do not have a fully healthy lifestyle, despite the fact that nurses can be expected to be educated and informed. We also know that most people with CHD have risk factors.

There is a clearly a job to be done to better inform people about how they can have a better and longer life. The solution, or at least a large part of it, lies in their own hands, but [www.ebandolier.com](http://www.ebandolier.com)

they have to believe in the message. Is nanny state-ism the best way? Who knows? The state does have enormous powers to improve the underlying culture. Anyone visiting New York, or Ireland, where public place smoking bans are in force can testify to impressive change for the better, with a large degree of public consent.

We spend masses on getting evidence about treatment effectiveness, but not much on how to get a healthy-living message across. *Bandolier*, at any rate, has looked and been disappointed. Our experience is that people respond best when given evidence rather than exhortation.

A famous advertising equation says:

$$\text{Satisfaction} = \text{performance} - \text{expectation}$$

It does just what it says on the tin. Which is why governments set modest targets, and then achieve them. All of which sort of prevents us from taking part in affairs that properly concern us. We should press for more and better.

There are legitimate concerns about individual liberty and the rights and concerns of society. These extend to what the public health message is, and who delivers it. What is astonishing is that it is being delivered most publicly by those we are least inclined to believe.

But the bottom line is this: the reduction in conventional risk factors for CHD will also help a whole range of other conditions, and leave us healthier for longer in several ways.

## References:

- 1 C Phillips, R Tudor Edwards. Economics of health in Wales. *Welsh Economic Review* 2002 14: 26-30.
- 2 K Kuulasmaa et al. Estimation of contribution of changes in classic risk factors to trends in coronary-event rates across the WHO MONICA project populations. *Lancet* 2000 355: 675-687.
- 3 UN Khot et al. Prevalence of conventional risk factors in patients with coronary heart disease. *JAMA* 2003 290: 898-904.
- 4 JA Critchley, S Capewell. Substantial potential for reductions in coronary heart disease mortality in the UK through changes in risk factor levels. *Journal of Epidemiology and Community Health* 2003 57: 243-247.

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# RESTLESS LEGS: IMPACT AND TREATMENT UPDATE

*Bandolier* has been keeping a quiet eye on restless legs syndrome (RLS). It is common (*Bandolier* 118), and though *Bandolier* has looked previously at trials of pergolide (*Bandolier* 67), those were very small with fewer than 60 patients in three trials. Because RLS is common, and because there are limited therapies available, any pharmaceutical company worth its salt would be looking for the possibility of significant potential sales with an effective drug. This may be happening, because we now have newer, larger, and better trials, and large surveys of the impact of RLS on patients, all funded by pharmaceutical interest in this area.

## RLS impact

A large primary care survey of RLS addressed this question [1]. It was conducted in France, Germany, Spain, UK and USA, involved 182 primary care doctors and 23,052 patients. Patients who visited their doctor for any reason over a two week period were asked to complete a screening questionnaire based on standard diagnostic criteria. A presumptive diagnosis required positive answers to four diagnostic questions (summarised in the Box).

Those with a presumptive diagnosis and with at least weekly frequency of restless legs were then asked additional questions about diagnosis, demographics, lifestyle, frequency, symptoms, and consultation and treatment.

## Results

Prevalence of various degrees of RLS in different countries and overall is shown in Table 1. RLS sufferers (defined as having symptoms at least twice weekly and some or high negative impact of symptoms of quality of life) were 3.4% of the population.

Symptoms of restless RLS considered most troublesome by RLS sufferers included sleep-related symptoms, uncomfortable feelings in the legs, and pain (Figure 1). Many RLS sufferers took a long time to get to sleep (Figure 2), or were

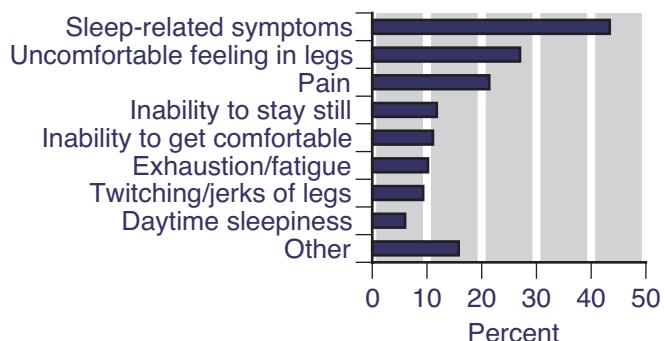
### Diagnostic questions for RLS

- 1 Do you have, or have you sometimes experienced, recurrent, uncomfortable feelings or sensations in your legs while sitting or lying down?
- 2 Do you have, or have you sometimes experienced, a recurrent need or urge to move your legs while sitting or lying down?
- 3 When present, do these feelings or movements improve or go away when you get up and walk around, for as long as you are walking?
- 4 Are these uncomfortable feelings, or this urge to move, worse in the evening or at night, compared with the morning?
- 5 During the last 12 months, have these uncomfortable feelings or sensations in your legs, or the need to move your legs while sitting or lying down, happened to you on average for one or more nights / days per week?

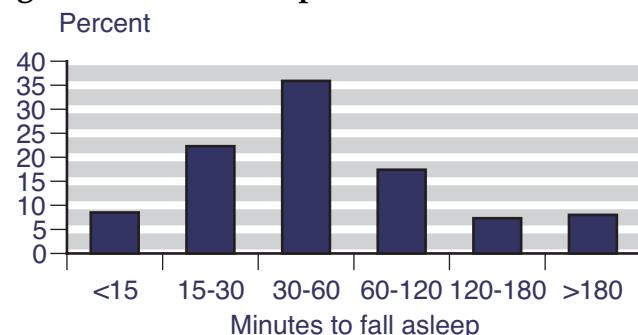
**Table 1: RLS prevalence by country**

Country	Sample size	Percent of population with		
		Any frequency	At least weekly	RLS sufferers
France	4808	7.4	5	2.1
Germany	6723	11.4	7.9	3.7
Spain	5752	5.5	3.6	1.9
UK	2114	14.2	11.3	5.6
USA	3655	13.3	11.3	5.8
All	23052	9.6	7.1	3.4

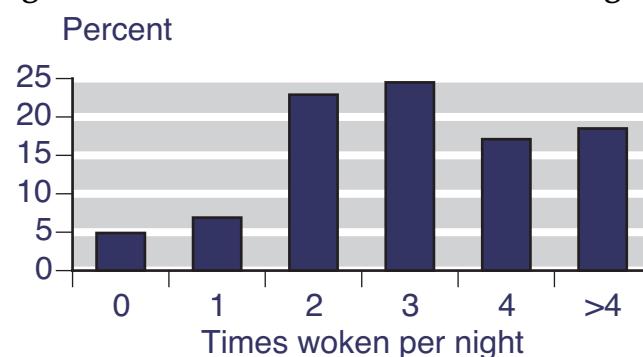
**Figure 1: Symptoms of RLS sufferers**



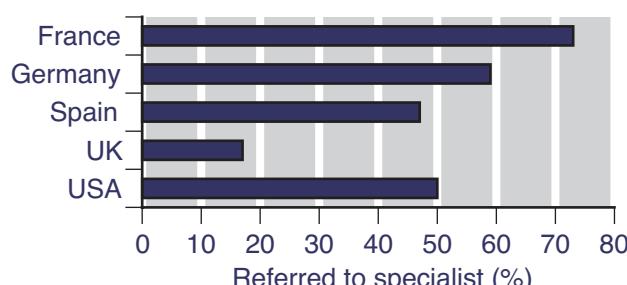
**Figure 2: Time to sleep of RLS sufferers**



**Figure 3: Times RLS sufferers woken at night**



**Figure 4: RLS sufferers referred to specialist**



**Table 2: Recent randomised trials in RLS**

Reference	Study	Methods	Main results
Garcia-Borreguero et al. Neurology 2002 59: 1573-1579. QS = 5	Randomised, double-blind, double-dummy, crossover comparing gabapentin with placebo for 6 weeks 24 subjects meeting International RLS criteria	Gabapentin started at daily dose of 600 mg, with titration up to 2,400 mg. Identical protocol for placebo. Outcomes RLS rating, patient global evaluation, sleep, adverse events	Mean end gabapentin dose 1,800 mg daily RLS rating mild 16/24 gabapentin; 8/24 placebo Patient global, sleep significantly better with gabapentin Adverse events higher with gabapentin, but no adverse event withdrawals
Trenkwalder et al. J Neurol Neurosurg Psychiatry 2004 75: 92-97. QS = 5	Randomised, double-blind, parallel-group comparison of ropinirole with placebo for 12 weeks 286 subjects meeting International RLS criteria	Ropinirole started at 0.25 mg/day, and titrated upwards over six weeks to maximum of 4.0 mg/day. Identical protocol for placebo. Outcomes RLS rating, patient global evaluation, sleep, quality of life, adverse events	Mean end ropinirole dose at 12 weeks 1.9 mg/day RLS score lower than placebo at 12 weeks At 1 week, much or very much improved in 40/146 with ropinirole and 18/137 with placebo At 12 weeks, much or very much improved in 78/146 with ropinirole and 56/137 with placebo Sleep measures better with ropinirole, but no difference for SF-36 scores Adverse events more common with ropinirole
Trenkwalder et al. Neurology 2004 62: 1391-1397. QS = 5	Randomised, double-blind, parallel-group comparison of pergolide with placebo for 6 weeks 100 subjects meeting International RLS criteria	Pergolide started at 0.05 mg/day and increased to 0.25 mg/day by day 8, with subsequent adjustments to 0.75 mg/day. Identical protocol for placebo. Outcomes patient global evaluation, sleep measures	Mean end pergolide dose was 0.4 mg/day Much or very much improved at 6 weeks in 32/47 patients on pergolide and 8/53 on placebo Sleep significantly improved with pergolide AE in 31/46 pergolide, 29/53 placebo

**Table 3: NNTs for RLS treatments**

Treatment	N	Weeks	Percent improved with		NNT (95% CI)
			Treatment	Placebo	
Gabapentin	24	6	67	33	3.0 (1.7 to 15)
Ropinirole	286	12	53	41	8.0 (4.2 to 99)
Pergolide	100	6	68	15	1.9 (1.4 to 2.7)

woken many times in the night (Figure 3). RLS sufferers were more likely than responders with at least weekly occurrence of restless legs to have a diagnosis of depression, insomnia, arthritis, nocturnal cramps, or neuropathy.

Two-thirds of RLS sufferers had consulted a doctor about their symptoms in the previous year. Overall half of sufferers had been referred to a specialist, though with large differences between countries, as low as 17% in the UK and as high as 73% in France (Figure 4).

## Trials of treatment

Three trials have been reported in 2000-2004 (Table 2). All were randomised, double-blind trials of high quality over six to 12 weeks duration. Significant benefit over placebo was reported for gabapentin, ropinirole, and pergolide. Using outcome of mild RLS score, or much or very much improved by end of trial, the percentage benefiting and NNTs are shown in Table 3. Given the limited amount of information, and a possible duration effect in trials, not too much should be made about any differences between treatments.

## Comment

What we have here is another step forward. The prevalence is the same as the large survey reported in *Bandolier* 118. The efficacy of pergolide in the large study is roughly the same as that reported in three tiny trials in *Bandolier* 67.

**Table 4: Updated diagnostic questions**

1 Do you have unpleasant sensations in your legs combined with an urge or need to move your legs?	Yes or No
2 Do these feelings occur mainly or only at rest and do they improve with movement?	Yes or No
3 Are these feelings worse in the evening or night than in the morning?	Yes or No
4 How often do these feelings occur?	
Less than one time per year	
At least one time a year but less than one time a month	
One time per month	
2-4 times per month	
2-3 times per week	
4-5 times per week	
6-7 times per week	
<b>A positive diagnosis requires the respondent to answer Yes to the first three questions. The fourth question provides an indication of the severity of the condition.</b>	

So we have a small step forward in our knowledge, though the three drugs may not be licensed for RLS in many jurisdictions. We can confirm that RLS is common, significantly affects about 1 in 30 people, and that there are treatments that work for some at the cost of some adverse effects.

The latest version of diagnostic questions for restless legs is in Table 4 [2].

### Reference:

- W Hening et al. Impact, diagnosis and treatment of restless legs syndrome (RLS) in a primary care population: the REST (RLS epidemiology, symptoms, and treatment) primary care study. *Sleep Medicine* 2004 5: 237-246.
- RP Allen et al. Restless legs syndrome: diagnostic criteria, special considerations, and epidemiology. A report from the restless legs syndrome diagnosis and epidemiology workshop at the National Institutes of Health. *Sleep Medicine* 2003 4: 101-119.

# TOPICAL NSAID FOR MASTALGIA

**Bandolier** is often challenged about common conditions for which there are only imperfect treatments. Mastalgia is common in women of reproductive age, with a significant impact on activities of everyday living. Use of topical NSAID appears to be effective, based on good but limited evidence.

## Background

An excellent review of management of mastalgia sets the scene [1]. It tells us that breast pain is of three types, about half of patients having pain for about five days in the days before menstruation, about a quarter having non-cyclical breast pain, and the rest having some extra-mammary pain usually associated with inflammation of the chest wall.

For those women with cyclical or non-cyclical mastalgia recording of pain and reassurance, together with some lifestyle changes, can be helpful. For instance, a well-fitting brassiere will help many. Weight loss and low fat diets can reduce oestrogen production, and that will resolve the problem with more.

Some treatments are known not to work, like evening primrose oil, vitamin supplements, or caffeine reduction. Treatments that do work are primarily hormonal, like danazol, tamoxifen or bromocriptine. Though effective, adverse events are major problems, resulting in high dropout rates. Two trials of topical NSAIDs, only one of which was randomised, had high levels of efficacy without adverse events or dropouts.

## Randomised trial [2]

In this Turkish study, 60 women with cyclic mastalgia and 48 with non-cyclic mastalgia were separately randomised to receive topical diclofenac or a placebo of soft, white paraffin. Gel equivalent to about 50 mg of diclofenac was applied to the breast skin three times a day for six months. Randomisation was by centrally administered computer-generated list with allocation concealment, but it is not certain that the two gels were identical.

Women were all advised to reduce dietary caffeine and fat intake, and all had routine breast examination, and either sonography or mammography, depending on age. Abnormality of biochemical tests was an exclusion criterion, but

all the women had to have mastalgia that affected their daily lives. Most had failed on other treatments because of adverse events or lack of efficacy.

Pain was measured on a visual analogue scale, and adverse events, particularly local effects, but also systemic effects like breathing disorders, were specifically sought.

## Results

There were no differences between the groups, and the average age of the women was about 40 years. All women completed the study and there were no adverse events.

Initial pain scores were high (Figure 1) and remained high with placebo. With topical diclofenac pain scores fell from very high to very low (Figure 1). With topical NSAID, fourteen women (47%) with cyclical mastalgia and 12 (50%) with non-cyclical mastalgia had no pain after six months, compared with no woman using placebo. The relative benefit was 27 (95% CI 4 to 190) and the number needed to treat with topical diclofenac for six months for one woman to have no breast pain compared with placebo was 2.1 (1.6 to 2.9).

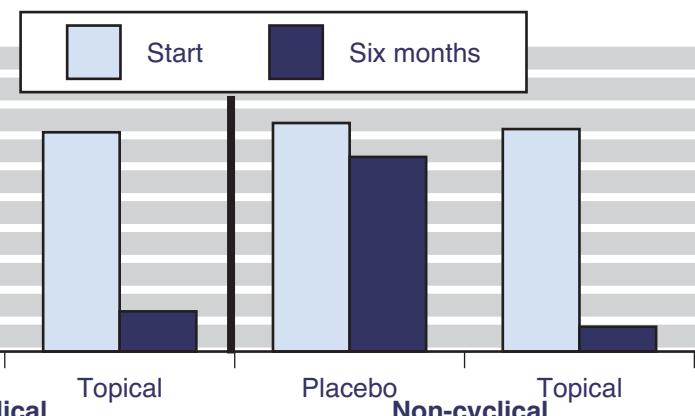
## Comment

This is an interesting and impressive result, showing high efficacy. The fact that blinding was not explicitly described is a problem, and, of course, this is just one (small) randomised trial. On the other hand topical NSAIDs are known to be effective for a range of acute and chronic conditions, and are known to be generally safe. The result is no big surprise, therefore.

It would be good to have the result confirmed, perhaps with other topical NSAID formulations, particularly with those products that are available without prescription. Many women might then be able to become their own expert patient.

### References:

- 1 R Gumm et al. Evidence for the management of mastalgia. Current Medical Research and Opinion 2004 20: 681-684.
- 2 T Colak et al. Efficacy of topical nonsteroidal anti-inflammatory drugs in mastalgia treatment. Journal of the American College of Surgeons 2003 196: 525-530.



**Figure 1: Breast pain at start of trial and after six months of topical diclofenac in women with cyclical and non-cyclical mastalgia**

# VITAMIN D AND FALLS IN THE ELDERLY

We know that falls are common amongst elderly people, causing considerable morbidity and mortality. With an ageing population the medical problems of falls (*Bandolier* 25), and the costs to society, can only increase. Previous studies have shown a moderate effect of vitamin D supplements on fracture risk, which has been attributed to changes in bone mineral density (*Bandolier* 37).

But fracture incidence reduction occurs within two to three months, and is consistent with a beneficial effect of vitamin D on muscle strength, leading to a reduction in falls and hence fractures. A recent meta-analysis has investigated the effect of vitamin D supplements on falls in the elderly.

## Meta-analysis

The review identified double-blind, randomised controlled trials of vitamin D in elderly populations that reported on falls [1]. The study population were community dwelling or institutionalised, with a mean age of at least 60 years, and in a stable state of health, so excluded, for example, those with recent acute hospitalisation or alcohol problems.

Falls were the result of low trauma, ideally involving "unintentionally coming to rest on the ground, floor or other low level", so excluded falls against a wall or furniture, or falls from a ladder (high trauma). The method of ascertainment and definition of the fall had to be clearly defined. The search strategy was comprehensive and not restricted by language.

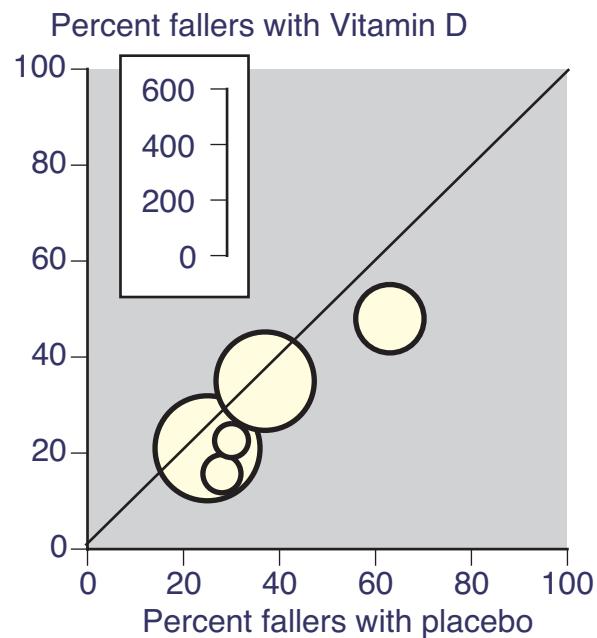
## Results

Five trials, with 1,237 participants, satisfied the inclusion criteria. The mean age ranged from 71 to 85 years, and only two trials included any men (total 239, 19%). Two trials gave vitamin D 800IU/day together with 1200 mg/day calcium; two trials gave an active vitamin D analogue and no calcium supplement; one trial gave vitamin D 400 IU/day with no calcium supplement, but reported dietary intake of 800–1000 mg/day. The duration of treatment was two months to three years.

There were consistently fewer falls in participants given vitamin D (Figure 1), but the result was statistically significant in only one trial. Combining the five trials, 37% of people had a fall with control, compared with 30% with vitamin D. The relative risk was 0.81 (0.69 to 0.94) with a number needed to treat of 14 (8 to 51) to prevent one fall.

Five other trials, with an additional 8764 participants, did not satisfy the inclusion criteria because the clinical characteristics of the participants (eg unstable health states) or outcome measures used (eg included only falls leading to medical attention) and would be expected to dilute any effect of vitamin D. When these trials were included in the analysis, the reduction in falls was only 13% compared with about 20% using the five high-quality trials. Despite this

**Figure 1. Falls in elderly people with and without vitamin D supplements**



expected reduction in effect, the benefit remained (just) statistically significant.

Although sample sizes limited statistical significance, there was no evidence of a difference in effect for men and women, or for studies with longer or shorter duration. There were insufficient data to determine the most effective dose (although in the trials 400 IU/day was probably insufficient, while 800 IU/day produced an effect) or formulation of vitamin D, or the role of calcium.

## Comment

One striking thought is how common falls were in these studies, ranging from 16% to 63% in all ten treatment and control groups in the five included trials. This makes fall prevention of real and growing importance. The authors discuss the possible physiological mechanism by which vitamin D may affect muscle function, so this result does not come out of the blue. There is a legitimate reason why use of vitamin D may help prevent falls in the elderly. Whether it is fall prevention, or increased bone strength, or both, reduced falls and fractures means less risk of devastating outcomes in older people.

While further studies could help to define the most effective dose and formulation, and the cost-effectiveness of targeted supplementation based on baseline vitamin D, the authors suggest that the economic and social costs of falls justify consideration of vitamin D supplementation based on the results of their meta-analysis.

Vitamin D is not without problems, though, perhaps most in the more frail older old. Some sensible guidelines would be useful, and perhaps exist.

## Reference

1. HA Bischoff-Ferrari et al. Effect of vitamin D on falls: a meta-analysis. *JAMA* 2004 291: 1999–2006.

## TRAVEL AND DVT: BRIEF UPDATE

*Bandolier* keeps being asked about DVTs by intrepid holidaymakers, for whom a week at Barry Island is no longer enough. A holiday is not a holiday without many hours spent scrunched up in a jet, or coach, or car. There is some more evidence from a new systematic review [1], but nothing much has changed.

*Bandolier* 110 reported on the incidence of deep vein thrombosis (DVT) in the population generally, and in travellers in particular. The consensus seems to be that symptomatic DVT occurs in about 50 in every 100,000 individuals in the general population. The incidence increases with age and with a number of established risk factors, and about 60% have a known cause (usually cancer or previous hospital admission).

### New meta-analysis

A new meta-analysis has returned to the question of an association between air travel and DVT [1]. It found that symptomatic DVT amongst air travellers is rare, and while the incidence of asymptomatic DVT is higher, the clinical significance of this diagnosis is uncertain.

There was no evidence of an increased risk of symptomatic DVT associated with air travel (three hours or more) (OR 1.1; 95% CI 0.6 to 1.9), nor with all forms of long-distance travel (OR 1.7; 0.9 to 3.2). In one study, air travel for more than 8 hours was associated with an increased risk if there were one or more additional risk factors (OR 3.0; 1.1 to 8.2).

### Comment

Given the low incidence of DVT, the analysis is limited by the small number of studies and participants. The authors suggest that we may never know if travelling, by any mode, increases the risk of DVT because studies large enough to detect significantly an increased risk would involve tens or hundreds of thousands of travellers and non-travellers, and are unlikely to be sponsored.

If there is an increased risk of DVT associated with any mode of long distance travel, it seems that it is small for the majority of us. If you have a history of DVT or embolism, it might be sensible to consult your doctor before travelling long distances.

If you have one or more other risk factors, such as heart failure, obesity, old age, it is worth considering compression stockings. All of us should be heeding the advice to avoid too much alcohol, keep hydrated, perform simple exercises, and break the journey if possible.

### Reference:

- 1 YY Adi et al. The association between air travel and deep vein thrombosis: systematic review and meta-analysis. *BMC Cardiovascular Disorders* 2004, 4: 7.

## WHICH TOOTHBRUSH?

Important things, toothbrushes. Together with toothpaste they are the stalwart of dental, and oral, health. So which should you use, the old-fashioned manual, or more expensive, but fun, powered toothbrush? A systematic review [1] tells us both are pretty much the same, but that perhaps rotational powered brushes have the edge.

### Systematic review

This sought randomised trials comparing manual and powered toothbrushes. Several databases were searched including a Cochrane trials register for oral health. Outcomes were quantified levels of plaque or gingivitis.

Powered brushes were defined as those with:

- 1 Side-to-side action
- 2 Counter oscillation (where each tuft rotates in the opposite direction to its neighbour)
- 3 Rotational oscillation (in which the brush head rotates in one direction and then the other)
- 4 Circular (brush head rotates in one direction only)
- 5 Ultrasonic (the bristles vibrate at ultrasonic frequencies)
- 6 Unknown action.

### Results

There were 29 trials (2,630 subjects) of at least 28 days duration. Most evidence was available for rotational oscillation toothbrushes. For these there was a significant improvement compared with manual brushing in plaque and gingival scores over 1-3 months, and in studies longer than three months.

For no other comparison was there any convincing evidence, either in the number of trials or a statistically significant difference.

### Comment

We know that using a toothbrush of any type with fluoride toothpaste will reduce tooth decay. Rotational oscillation powered brushes also reduce plaque and gingivitis, compared with manual brushing.

The trouble is that we don't, as yet, know quite whether this has any health benefits, but given the possibility that less plaque and better gums are probably good ends in themselves, the balance tilts in favour of powered toothbrushes.

In the meantime, those of us with a rotational oscillation brush can feel at least a little bit smug in the morning, at least if our toothbrush is charged up.

### Reference:

- 1 C Deery et al. The effectiveness of manual versus powered toothbrushes for dental health: a systematic review. *Journal of Dentistry* 2004 32: 197-211.